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From: Ham-Digital Mailing List and Newsgroup <ham-digital@ucsd.edu>  
Errors-To: Ham-Digital-Errors@UCSD.Edu  
Reply-To: Ham-Digital@UCSD.Edu  
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Subject: Ham-Digital Digest V93 #12  
To: Ham-Digital

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Today's Topics:

    Deviation and frequency emphasis (was Re: How to set deviation)  
        TCP/IP and unix machines

Send Replies or notes for publication to: <Ham-Digital@UCSD.Edu>  
Send subscription requests to: <Ham-Digital-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

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We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: Tue, 17 Aug 93 22:04:51 GMT  
From: netcomsv!orchard.la.locus.com!prodnet.la.locus.com!lando.la.locus.com!  
dana@decwrl.dec.com  
Subject: Deviation and frequency emphasis (was Re: How to set deviation)  
To: ham-digital@ucsd.edu

In article <fred-mckenzie-160893100551@k4dii.ksc.nasa.gov> fred-  
mckenzie@ksc.nasa.gov (Fred McKenzie) writes:

>I have found many veteran hams with packet signals I couldn't copy. I  
>think it is because most of us buy a packet TNC, and just hook it up with  
>no adjusting.

I have this experience frequently.

>In my opinion, you should adjust the TNC deviation with the calibrate mode  
>set to toggle between the high and low tones. Raise the level until it  
>reaches the peak deviation limit, and back off. A packet signal set to 3.5  
>KHz two-tone deviation, should about right for a 5.0 KHz peak deviation  
>system. In theory, the "square wave" approach should work, since it is an  
>FM system. However, it doesn't seem to work as well in practice.

Hmmm... I think I disagree with this method. Standard practice dictates that transmitted signals have a +6dB/octave frequency response. In other words, the deviation should be twice as much at 2200Hz than at 1100Hz. Of course, most receivers have de-emphasis circuits (which attempt) to restore a flat frequency response. A phase-modulated transmitted inherently experiences the pre-emphasis, but a direct-FM transmitter requires a pre-emphasis network. When measuring deviation, one must look directly at discriminator output, since the audio output of the radio will have been de-emphasized (and possibly also further filtered in the audio chain). Even when looking at the discriminator output, make sure that you can trust the output; some designs hang large capacitors across the discriminator output that must be removed to remove de-emphasis.

I personally believe the correct approach is to adjust for \*no more\* than 4KHz of deviation on the 2200Hz tone. The 1200 Hz should \*always\* be lower in deviation than the 2200Hz tone; if not, there's something wrong with your transmitter. I personally would recommend using \*3KHz deviation at 2200Hz\*. One of the reasons to use smaller amounts of deviation than the 4.5KHz number is simple; distortion that is not noticeable on voice may noticeably degrade packet performance. A radio with a narrow or off-center IF filter (they exist!) will distort the wider deviation signals quite a bit.

Furthermore, I've done some testing with radios in the shack. The GE MVP I use for 1200 baud packet provides a low-impedance discriminator output. I use a 12k/.01uF RC lowpass filter followed by a voltage follower to provide a de-emphasized output, thus avoiding distortion in the MVP audio stages. This is a "standard" 120uS de-emphasis. Using a service monitor, this configuration has proven to be very good. However, looking at signals on 145.01, I would say virtually everyone is far too hot, running peak deviations in excess of 5KHz. Furthermore, virtually everyone in my area displays pretty large cases of "twist", i.e., the 1200 and 2200Hz tones are significantly different in amplitude. I would say the average twist I've seen is greater than 3dB and as much as 6dB.

I'm curious where the twist is coming from. My Motorola MCX100, a pre-emphasized direct-FM transmitter, will produce a signal with under 1dB of twist when adjusted for about 3KHz deviation on a 2200Hz tone. My MVP, a phase modulated radio, produces less than 1dB of twist. My guess is that people run too much output from the TNC into the transmitters, and the signal is clipped and arbitrarily low-pass filtered, resulting in uneven amplitudes.

It seems that the people running 5KHz+ deviation also have the worst twist.

As a little gripe, I noticed that the local, very popular, MSYS BBS

port on 145.01 looked quite hot. I asked the operator what deviation he was running and he said "Huh? I've never looked".

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\* Dana H. Myers KK6JQ | Views expressed here are \*  
\* (310) 337-5136 | mine and do not necessarily \*  
\* dana@locus.com DoD #466 | reflect those of my employer  
\*  
\* This Extra supports the abolition of the 13 and 20 WPM tests \*

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Date: 18 Aug 1993 03:39:41 GMT  
From: usc!howland.reston.ans.net!vixen.cso.uiuc.edu!ux1.cso.uiuc.edu!  
dobrowol@network.ucsd.edu  
Subject: TCP/IP and unix machines  
To: ham-digital@ucsd.edu

trier@odin.ins.cwru.edu (Stephen C. Trier) writes:

>It depends on what you mean and how the Unix handles TCP/IP.

Yes, I was a bit vague in my question.

>If you use a user-space TCP/IP, like one of the ka9q ports to Unix, the  
>access will be determined by the user-space TCP/IP, just as with a ka9q  
>on any other host OS.

What I meant to ask was how passwords are sent over packet. Wouldn't others be able to "see" a user's password if they were just sent over the air 'as is'?

tom...

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LunarWolf KB9IQX ...somos agresivos,  
spleen@uiuc.edu no violentos...

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End of Ham-Digital Digest V93 #12

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